# *FY 2003-04*
# *BIOSOLIDS MANAGEMENT PROGRAM*
# *and*
# *EMS PERFORMANCE REPORT*

**City of Fort Worth, Texas**
**Water Department**
**Village Creek Wastewater Treatment Plant**

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# BIOSOLIDS MANAGEMENT PROGRAM
# PERFORMANCE REPORT

## SUMMARY

In June 2004, the City of Fort Worth accelerated the "option to renew" clause of the current Long-Term Solids Dewatering, Processing and Disposal contract (City Secretary Contract No. 20283) and negotiated with Renda Environmental Inc. (REI) to continue to further process, dewater, transport and beneficially land apply biosolids for the Second Five (5) Year Renewal Option.

The contract was amended to include:

a. A price reduction for the further processing and reuse of biosolids.
b. Renewal of the Long-Term Biosolids Contract until March 31, 2010.
c. The Operation and Maintenance of the Village Creek Wastewater Treatment Plant (VCWWTP) five MW turbine generators; and
d. The terms for the purchase of supplemental gas as an additional fuel source for the VCWWTP turbine generators, consistent with the terms of the TXU settlement agreement.

On June 29, 2004 (M&C C-20131), the City Council authorized the second five-year renewal of the Long-Term Solids Dewatering, Processing and Disposal Contract with amendments.

The City of Fort Worth continued in the process of implementing a new management system for its biosolids program called the Biosolids Environmental Management System (EMS).

| | |
|---|---|
| Jan 2004 | Submitted "Draft" EMS Manual to the NBP for review |
| Mar 2004 | Underwent EMS "Status Review"<br>The EMS "Status Review" involves an evaluation, by the NBP and the NBP Account Executive (CH2MHill), of the City's EMS manual with respect to the NBP EMS program requirements. Based on the results and recommendations of the status review, the Water Department made the recommended and required changes. |
| Apr 2004 | Declared the EMS operational, and began "operating" under EMS for 6 months minimum |
| Sep 2004 | Prepared for an Internal Audit of the EMS Program by the City's Internal Audit Dept. |

One of the requirements of the EMS program (Element 15) is to provide a Biosolids Management and EMS Annual Performance Report (APR) outlining biosolids activities and operations during the year and make the information available to interested parties. This report summarizes the City's biosolids program performance for fiscal year 2003-2004.

The APR summarizes the biosolids management program, biosolids production and reuse, goals and objectives, EMS activities, public outreach and commitment toward continual improvement. This report and other details on the different biosolids activities are detailed on our website, http://www.fortworthgov.org/water/Wastewater/emsbiosolids.htm

**SECTION 1**
**Biosolids Management Program**

Annual report period from August 1, 2003 to July 31, 2004

Registration/Permit Number: **TPDES #10494-013**
Class A Authorization Facility No.: #**720001**
Transporter No.: **#21942** (Renda Environmental Inc.)

AMOUNT of biosolids beneficially reused/recycled: **35,751** dry tons / year
AMOUNT of biosolids beneficially reused/recycled: **32,433** ***metric*** tons / year

PERCENTAGE of biosolids beneficially reused/recycled: **100%**

TYPE of biosolids produced: **Class A**

***Biosolids Production***
The City of Fort Worth produces biosolids at the Village Creek Wastewater Treatment Plant (VCWWTP). In FY 2003-2004, Village Creek produced approximately 35,751 dry tons of biosolids.

During the past year the Fort Worth Biosolids Beneficial Reuse Program continued to provide our customers, the citizens of Fort Worth and our 23 Customer Cites, landowners, farmers, adjacent landowners and the general public, with processed, stabilized, environmentally safe Class A, Exceptional Quality (EQ) biosolids.

100% of the biosolids that the Village Creek Wastewater Treatment Plant produces are anaerobically digested, dewatered by belt filter press to produce a cake product that is 25% to 28% solids, and post-lime stabilized after dewatering to achieve the highest biosolid quality recognized by EPA - **Class A, Exceptional Quality (EQ)** biosolids.

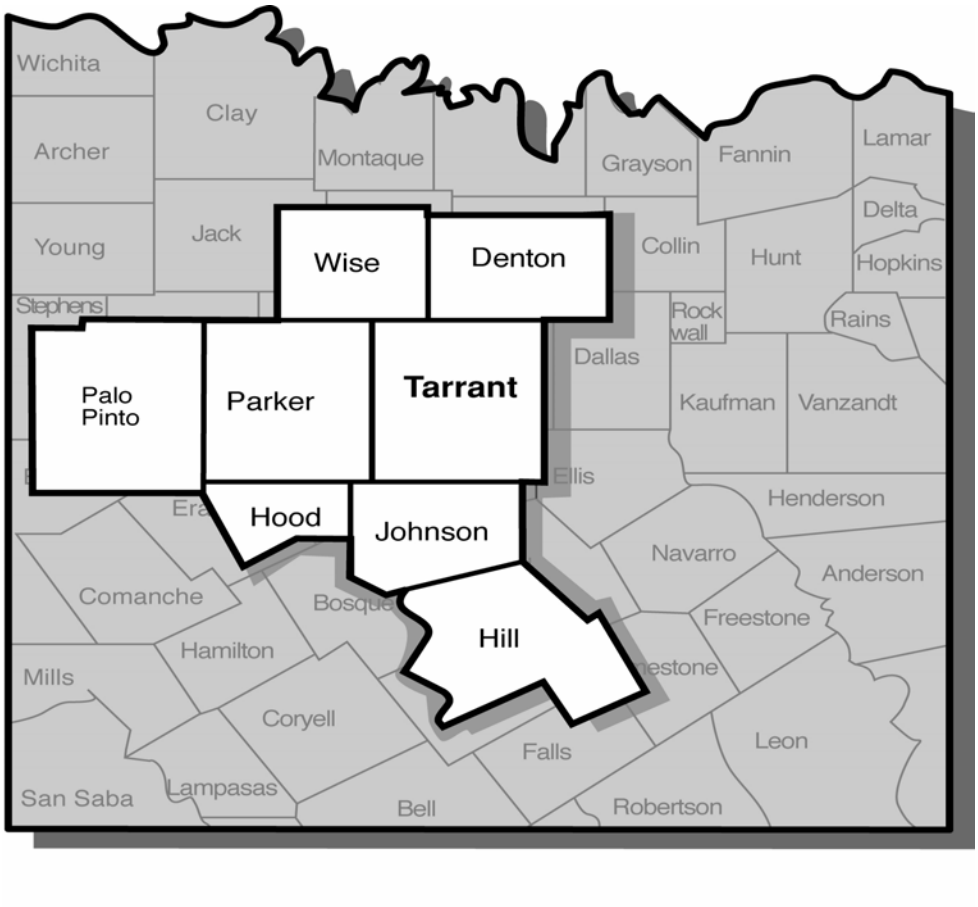
The Biosolids Beneficial Reuse program continues to grow and expand and is positively accepted by the general public and adjacent landowners around our application sites. The Fort Worth Biosolids Program continues to have a 60-90 day "back-log" list of landowners who desire biosolids fertilization.

***Beneficial Reuse Options and Management Practices***
Since 1995, the City continues to maintain its 100% beneficial reuse/recycling of biosolids program.

One hundred percent (100%) of the Class A biosolids produced at Village Creek Wastewater Treatment Plant were properly processed, monitored and agronomically land applied to thousands of acres of farmland and pasture land in Tarrant and surrounding counties in the North Texas area, to provide excellent soil fertilization and nutrient value to crops and grasses.

The map and table below, shows the landowner participation by county in the Fort Worth Beneficial Reuse of Biosolids Program.

**FY 2003-2004**
**FORT WORTH BIOSOLIDS "BENEFICIAL REUSE" PROGRAM**
**LAND OWNER PARTICIPATION**




| FORT WORTH WATER DEPARTMENT "BENEFICIAL RECYCLING" of CLASS "A" BIOSOLIDS PROGRAM | | | | | |
|---|---|---|---|---|---|
| **Counties** | **Land-Owners** | **Noticed Sites** | **Noticed Acres** | **TOTAL Acres** | **(%) of Total Acreage** |
| Denton | 2 | 3 | 373 | 373 | 0.90% |
| Hill | 10 | 20 | 3,113 | 3,113 | 7.48% |
| Hood | 1 | 1 | 251 | 251 | 0.60% |
| Johnson | 20 | 30 | 5,577 | 5,577 | 13.40% |
| Palo Pinto | 2 | 2 | 4,035 | 4,035 | 9.70% |
| Parker | 3 | 13 | 17,337 | 17,337 | 41.66% |
| **Tarrant** | **15** | **22** | **3,918** | **3,918** | **9.42%** |
| Wise | 10 | 14 | 7,010 | 7,010 | 16.85% |
| **TOTAL 8** | **64** | **104** | **41,614** | **41,614** | **100%** |

## Goals and Objectives

The City has established the following goals and objectives for biosolids management and EMS

| GOALS | OBJECTIVES | ACTIONS TAKEN TOWARD GOALS |
|---|---|---|
| 100% Beneficial Reuse of Class A Biosolids | Maintain 100% Class A sludge treatment | See APR Sections 1 and 5 |
| | Maintain positive public perception of the program | |
| | Maintain working/partnering relationship with REI | |
| Expand the Public Knowledge and Acceptance of Biosolids Reuse | Update biosolids brochures | See APR Section 5 |
| | Develop an informational brochure that can be distributed by REI drivers | |
| | Maintain Community "Out-Reach" Programs | |
| | Maintain/Update Biosolids EMS "Website" | |
| | Provide a Website "feedback" feature | |
| Comply with All Federal, State, and Local Regulatory Requirements | Maintain Industrial Permitting and Inspections | See APR Section 1 |
| | Maintain Monitoring & Sampling Programs at the Plant | |
| | Maintain Biosolids "land application" processes and practices | |
| Implement a NBP Certified Biosolids EMS | Perform Internal Audit | See APR Section 2 |
| | Apply for Third Party Audit | |
| | Undergo Third Party Audit | |
| Complete VCWWTP SOP Updates | Complete Primary Treatment SOP Manual | Internal EMS Audit (Sept. 2004) found these 90% complete. |
| | Complete Secondary Treatment SOP Manual | |
| | Complete Digester SOP Manual | |

### *Contractor Performance*

The City currently has one environmental contractor; Renda Environmental Inc. (REI) that continued to provide and is responsible for (1) further processing (dewatering by belt-filter press), (2) stabilization (3) transportation and (4) beneficially reusing the biosolids produced at VCWWTP by land application under a "Long-Term" contract with the City of Fort Worth.

Renda Environmental Inc. is in compliance with all local, state, and federal requirements and monitors and tracks the amount of biosolids applied, and the crops planted and harvested. REI is also enhancing public relations by currently developing a "newsletter" detailing biosolids items and issues that will be published and mailed quarterly to all current landowners. REI also conducts tours of the biosolids facility and at application sites when requested. The Water Departments Biosolid Management performs unannounced site visits and inspections to ensure that the contractor is following best management practices concerning biosolids transportation and land application.

### *Monitoring and Measurement Results*

FREQUENCY of Monitoring/Analysis:

| | |
|---|---|
| (a) Fecal Coliform | three (3) times per month |
| (b) Pathogens | two (2) times per month |
| (c) Metals | monthly |
| (d) PCBs | monthly |
| (e) TCLP | annually |
| (f) pH | daily |
| (g) % Solids | daily |

METHOD of Class A Pathogen Reduction Requirement Alternative used (30 TAC 312.82(a): ___**4**___

METHOD of Vector Attraction Reduction Requirement used (30 TAC 312.83(b)(1-8): _Alternative__**6**___

By City contract, the Contractor uses an independent certified laboratory to analyze the biosolids produced at Village Creek Wastewater Treatment Plant. In addition, the Water Department's certified Central Laboratory also analyzes biosolids.

Samples of biosolids are taken from the process areas and analyzed for metals, PCBs, pathogens and vector attraction. Samples are taken daily, weekly, monthly, or per the frequency established by the contract, federal, state, and local legal reporting requirements. Ten metals are analyzed monthly and all metal concentrations were below Table 1 ceiling concentration limits and Table 3 pollutant concentrations as required by the U.S. EPA Part 503 federal regulations for the use or disposal of sewage sludge (see metals result table below).

**Metal Concentration**

| YEAR **2003-2004** | Ar | Cd | Cr | Cu | Pb | Hg | Mo | Ni | Se | Zn | Pathogen Requirement Achieved | Pathogen Reduction Alternative Used | Vector Attraction Reduction Alternative Used | PCB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | mg/kg | mg/kg | Mg/kg | mg/kg | Mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | | | | mg/kg |
| NPDES Permit Limits (TABLE 1) | 75 | 85 | 3000 | 4300 | 840 | 57 | 75 | 420 | 100 | 7500 | n/a | n/a | n/a | n/a |
| NPDES Permit Limits (TABLE 3) | 41 | 39 | *** | 1500 | 300 | 17 | *** | 420 | 36 | 2800 | n/a | n/a | n/a | n/a |
| **Average Metals Concentration** | **1.1** | **0.1** | **8.9** | **77.6** | **4.9** | **0.04** | **6.8** | **5.1** | **0.45** | **140** | **Class A** | **4** | **6** | * |

*** No limit established by federal regulations

* -PCB detect (Apr/04 – 209 ug/kg), (May/04 – 209 ug/kg), (Jun/04 – 7200 ug/kg). NOTE: EPA Regulatory Limit PCB>**50 mg/kg**

PCBs were detected in the biosolids during a three (3) month period in FY 2003-2004. The concentrations of the PCB's were greatly below the EPA Regulatory limit of 50mg/kg in sludge. The Pre-Treatment Division, the Regulatory/Environmental Coordinator, Village Creek and the Central Lab. have been working together to determine if possible, the source of PCB. To date, we have been unable to determine where the minute PCB detect originated. No PCB detect has occurred since June 2004.

Pathogen Reduction requirements were met, by having the sludge analytically tested to ensure that the density of fecal coliform is less than 1,000 Most Probable Number per gram of total solids (dry weight basis) which meets the Part 503 compliance requirement. The biosolids were analytically tested to ensure that the density of enteric virus in the sewage sludge is less than one Plaque-forming Unit per four grams of total solids (dry weight basis) and that the density of viable helminth ova in the sewage sludge is less than one per four grams of total solids (dry weight basis) which meets the Part 503 compliance requirements.

The February 2004 helminth ova test results reported a density of two viable helminth ova per four grams of total solids. This sample was retested. The retested sample and the March sample both showed to contain no viable helminth ova. During the six week testing period, REI applied the biosolids to fields in the City's Sludge Only Landfill at an agronomic rate. REI and the City increased their testing frequency and made minor adjustments to the lime addition to the sludge in response to the helminth ova detections. No viable helminth ova have been detected since. Corrective Action Notice 2004-01 further describes this situation.

Vector Attraction Reduction requirements were met, by the pH of sewage sludge shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for two hours and then remain at a pH of 11.5 or higher for an additional 22 hours, which meets the Part 503 compliance requirements.

**SECTION 2**
**Environmental Management System (EMS) Performance**

*Summary*
The implementation of an Environmental Management System (EMS) for the Fort Worth Biosolids Program continued to make progress.

Jan 2004 Submitted "Draft" EMS Guidance Manual to the NBP for review
Mar 2004 Underwent EMS "Status Review"
The EMS "Status Review" involves an evaluation, by the NBP and the NBP Account Executive (CH2MHill), of the City's EMS manual with respect to the NBP EMS program requirements. Based on the results and recommendations of the status review, the Water Department made the recommended and required changes.
Apr 2004 Declared the EMS operational, and began "operating" under EMS for 6 months minimum

Sep 2004 Prepared for an Internal Audit of the EMS Program by the City's Internal Audit Dept.

The consultant firm, Halff and Associates Inc., continued to assist the Water Department in development of the EMS manual and in the upcoming internal and 3rd Party external audits of the EMS in the coming year.

Renda Environmental Inc. has been very proactive and is fully committed in "partnering" with the City of Fort Worth (VCWWTP) in the development and establishment of an Environmental Management System (EMS) for the Fort Worth Biosolids Program. REI has electronically and physically updated their filing systems and SOP's to conform to the EMS elements and guidelines.

*Corrective Action Notices (CAN)*

| CAN # | SUBMITTED | TOPIC | CLOSED | DESCRIPTION |
|---|---|---|---|---|
| 2004-01 | 9/16/04 | Helminth Ova | 9/16/04 | APR SEC. 1 |

**SECTION 3**
**Legal Requirements Summary**

There were no significant Legal requirement changes in the state or federal rules this period.

**SECTION 4**
**Spills and Other Emergency Actions & Responses Summary**

Minor Spillage (02-16-04) – A small biosolid spillage (approx. one wheel barrel) occurred as the result of REI truck driver not being able to stop fast enough for traffic slowdown in front, resulting in the spillage of biosolids on the Hwy 287. Tarps were in place, but the movement of biosolids in the truck went over the top of the front of the trailer. Proper authorities (City, Contractor, Highway Patrol, etc.) were notified, traffic was diverted, no accidents occurred, the spill prevention procedures were put into action and the Contractor cleaned up the spillage within 20 minutes and highway was reopened to traffic. Minor Spillage (06-03-04) – A minor biosolid spillage (approx 10 cu. Yds.) occurred as the result of REI truck driver going to fast while attempting to turn off

Hwy 114, resulting in the spillage of biosolids on Hwy 114 near Rhome, TX. Tarps were in place, but the movement of biosolids in the truck went over the top of the front of the trailer and under the tarp. Proper authorities (City, Contractor, Highway Patrol, etc.) were notified, traffic was diverted, no accidents occurred, the spill prevention procedures were put into action and the Contractor and the Volunteer Fire Dept. of Boyd cleaned up the spillage within 1.5 hours and highway was reopened to traffic

**SECTION 5**
**Public Outreach and Participation Program Summary**

A main requirement of the City's EMS is to further develop and expand public outreach and public participation programs. The City and our Contractor (REI) continued to reach out and inform the general public on biosolids, biosolids processing, biosolids stabilization, land application, biosolids fertilization and the development of an EMS using best biosolids management practices for the Fort Worth Biosolids Program.

Together and separately, the City and REI participated in local outreach events and programs, see listing below, providing updated brochures, literature and information on the Fort Worth biosolids beneficial reuse program, biosolids EMS program and biosolids literature in general.

**PUBLIC RELATIONS & PARTICIPATION**
**In Local Events**

The City of Fort Worth Biosolids Program has and is an active participant in a number of local events that promote and educate the public on Environmental issues:

| **LOCAL EVENTS** | | |
|---|---|---|
| | | |
| **Fort Worth Home and Garden Show** | Annually in March | **X** |
| **Neil Sperry Garden Show** | Annually in February | **X** |
| **Waterfest** (Water Department Open House) | Annually in May | **X** |
| **Trinity River Awareness Day** | Annually in September | X |
| **Cowtown Air** | Annually in May | **X** |
| **MayFest** | Annually in May | X |

Plant tours and land application site tours were conducted. In 2003-2004, sixteen (16) plant tours and (10) land application site tours were conducted. Approximately 1,230 individuals visited and toured the plant.

Formal presentations to varied groups (citizens, schools, Colleges, regulators, WEF, WEAT, TWUA, other City Departments, engineers etc.) were presented on the Fort Worth Biosolids reuse and recycling Program and on the implementation of the Biosolids EMS.

As part of the Biosolids EMS, Village Creek expanded its public outreach program to include various media. The biosolids EMS website was updated and enhanced on the City's internet site to promote information sharing in a timely manner.

In addition, the Fort Worth Star Telegram "City Page" is available in public outreach efforts to provide correct, reliable information to the public and solicit feedback from interested parties and stakeholders.

**SECTION 6**

**Future Plans / Advances in Biosolids Technology**

The City of Fort Worth is completing construction of the High Rate Clarifier, gravity belt thickeners, and fine bar screens. These new processes will allow the wastewater treatment plant to operate more efficiently in all weather conditions.

The Water Department will continue to be in the forefront of recognizing and studying new technologies associated with biosolids future possibilities and the feasibility of beneficially reusing the plants biosolids production to enhance and protect the environment.

**SECTION 7**
**Contact Information**

If you have comments on this report or any other biosolid related items please call the Village Creek Wastewater Treatment Plant at 817-392-4960.

To find out more information about the City of Fort Worth Biosolids "Beneficial Reuse/Recycling" Program and the Biosolid EMS program, you can access the Biosolids website at:

http://www.fortworthgov.org/water/Wastewater/emsbiosolids.htm